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EP 0866397 A1
EP 0495612 A2
US 4924387 A
US 4841387 A

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(54) Abstract Title
An apparatus and method of generating an audio recording having linked data

(57) A method is given for generating an audio recording including a linked second set of data that is input by the user during the audio recording. The second data set may by linked to a subsection of the audio data. Flags may be placed to mark certain points on the audio record so that when the audio record is replayed, the second data set is presented when the subsection is output. The second data set is preferably input by a keyboard, video data, a stylus, or networked data. The data sets are preferably temporally linked. In a preferred embodiment it is possible to output the audio data as visual data as textual data, while still allowing the second data set to be displayed at the appropriate time by placing flags. Also given is an apparatus 100 for carrying out the method. Apparatus 100 has a stylus 104 to input handwritten text 106 on a touch sensitive display 102. Also provided is a microphone 108.

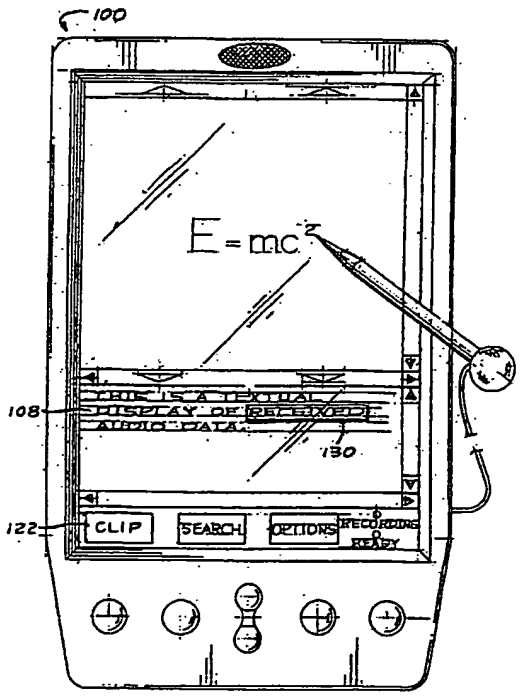

FIG. 3

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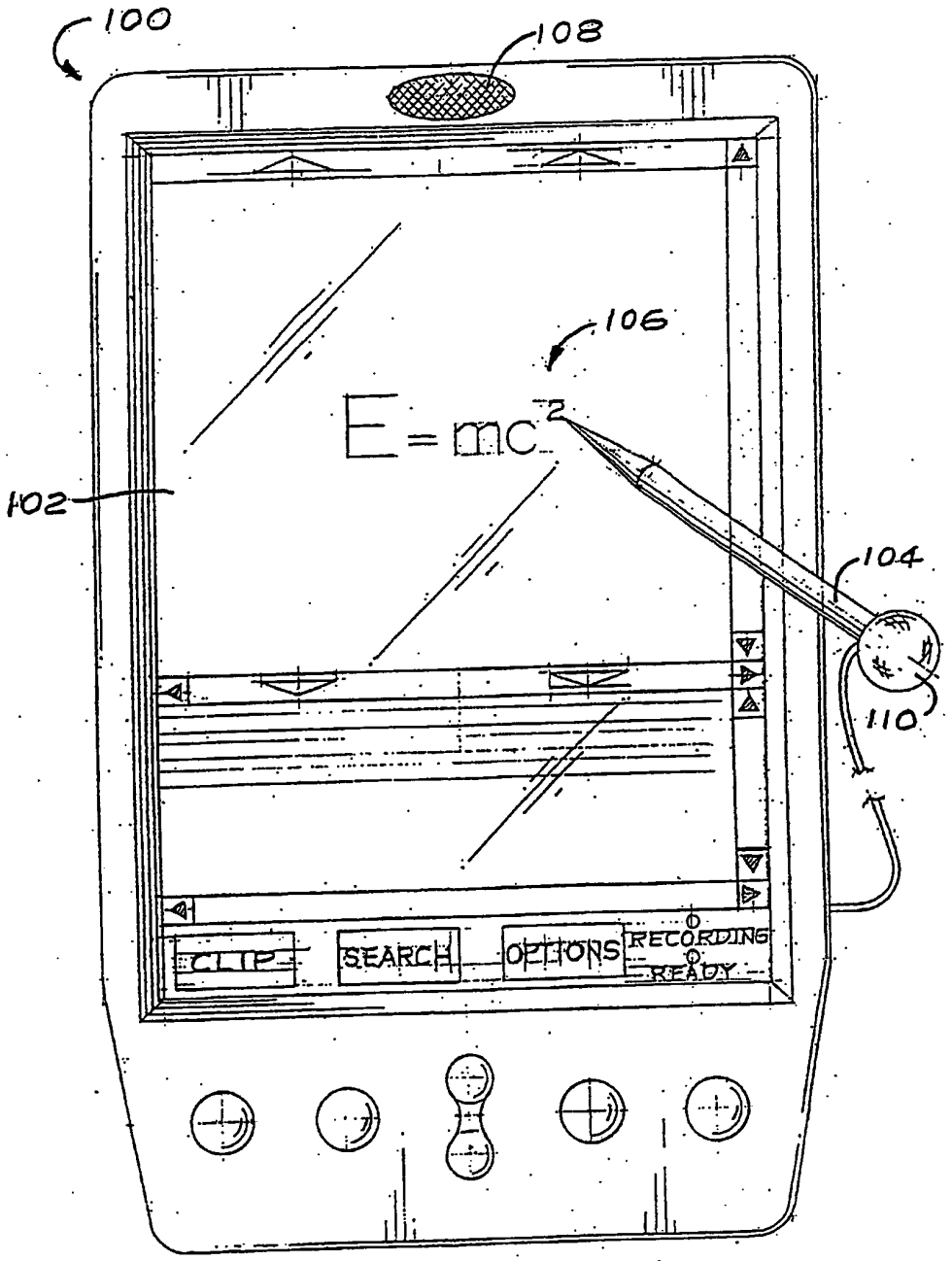
100
108
106
$E = mc^2$
102
104
110
CLIP
SEARCH
OPTIONS
RECORDING
READY

FIG. 1

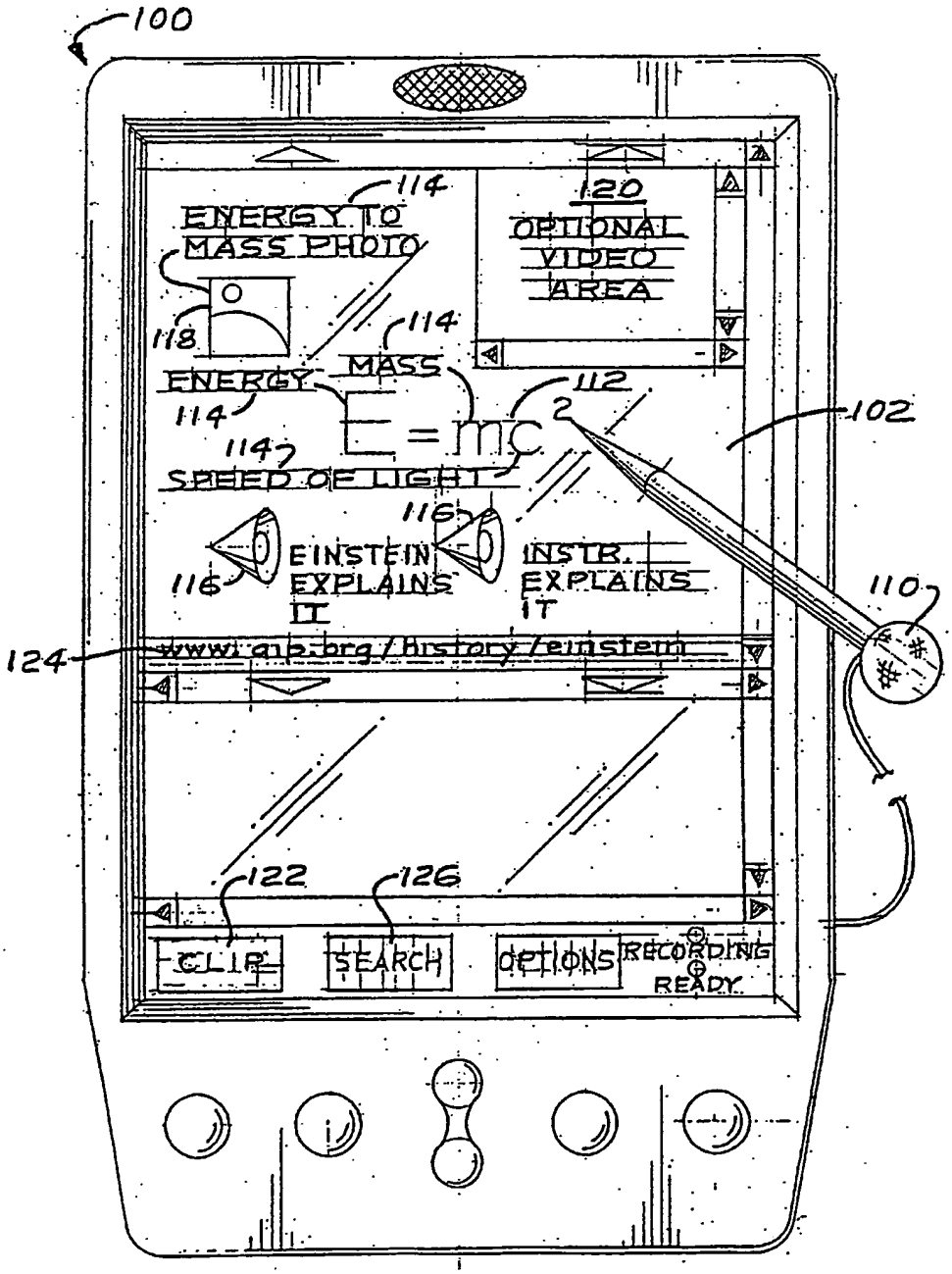
100
114
ENERGY TO MASS PHOTO
120
OPTIONAL VIDEO AREA
118
114
ENERGY
MASS
114
112
$E=mc^2$
102
114
SPEED OF LIGHT
116
116
EINSTEIN EXPLAINS IT
INSTR. EXPLAINS IT
110
124
www.aip.org/history/einstein
122
126
CLIP
SEARCH
OPTIONS
RECORDING READY

FIG. 2

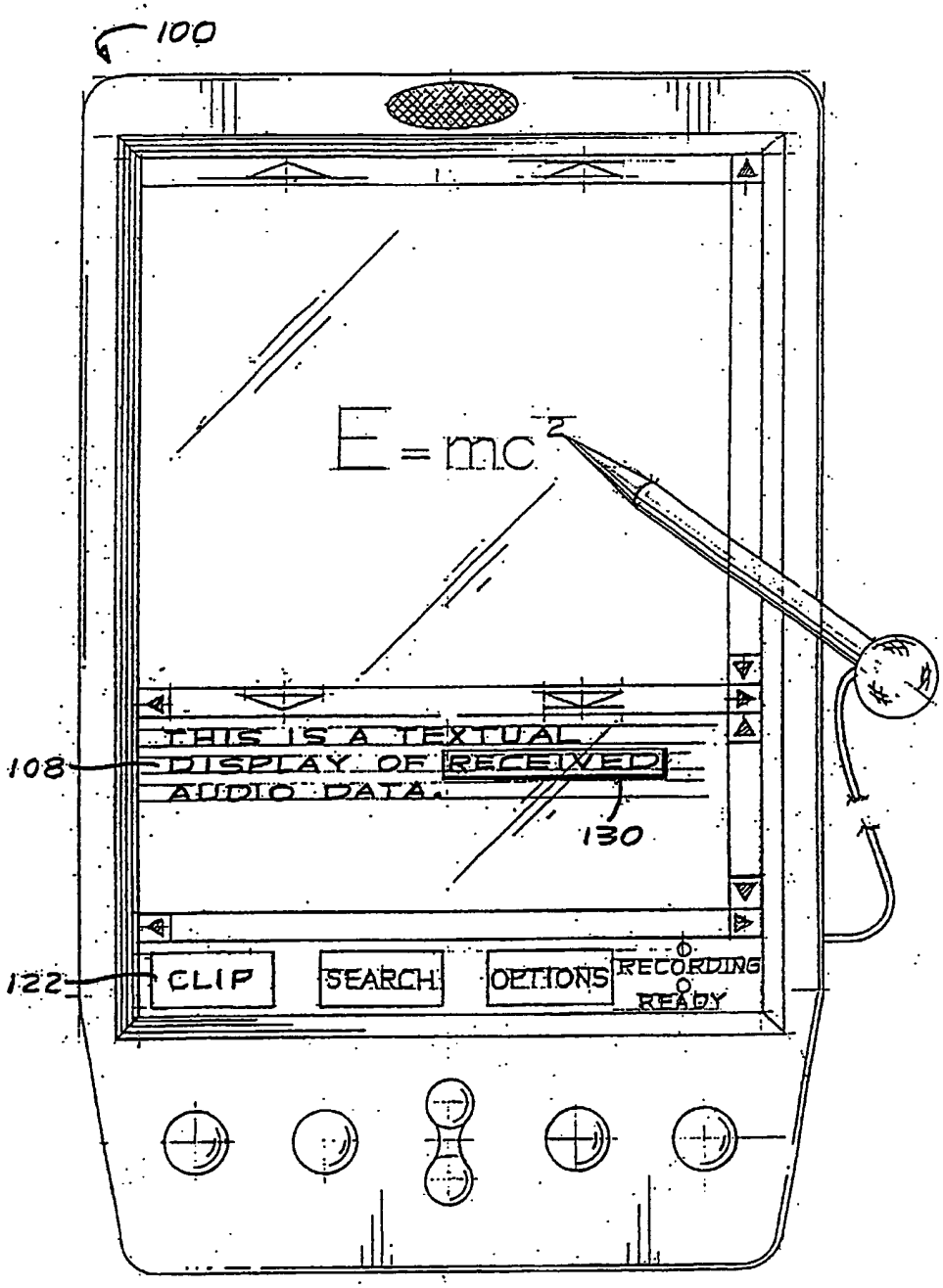
100
E = mc²
THIS IS A TEXTUAL
DISPLAY OF RECEIVED
AUDIO DATA.
108
130
122
CLIP
SEARCH
OPTIONS
RECORDING
READY

FIG. 3

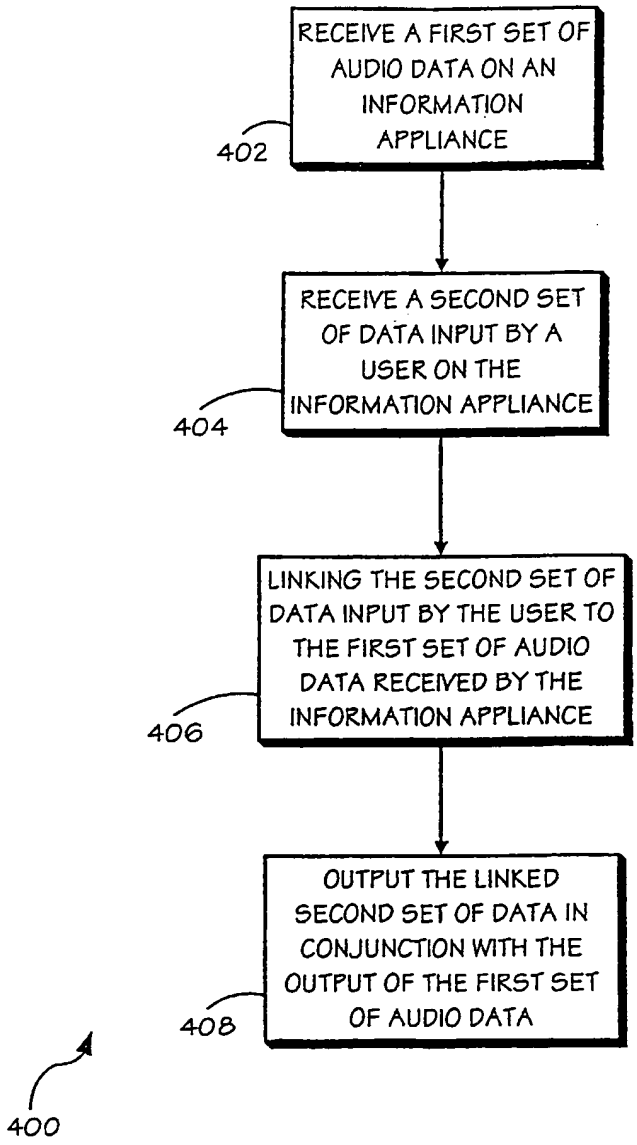
RECEIVE A FIRST SET OF AUDIO DATA ON AN INFORMATION APPLIANCE
402
RECEIVE A SECOND SET OF DATA INPUT BY A USER ON THE INFORMATION APPLIANCE
404
LINKING THE SECOND SET OF DATA INPUT BY THE USER TO THE FIRST SET OF AUDIO DATA RECEIVED BY THE INFORMATION APPLIANCE
406
OUTPUT THE LINKED SECOND SET OF DATA IN CONJUNCTION WITH THE OUTPUT OF THE FIRST SET OF AUDIO DATA
408
400

FIG. 4

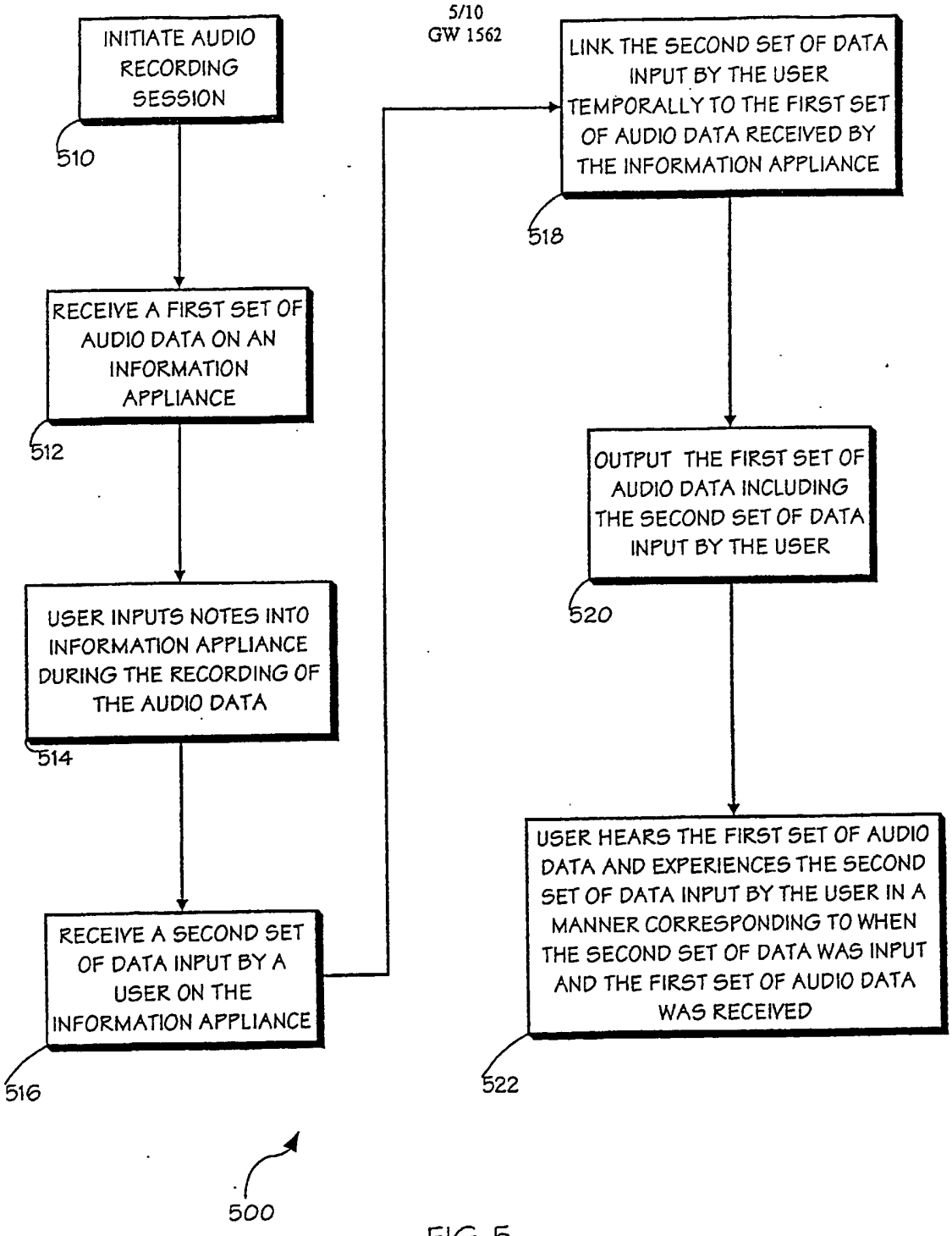
INITIATE AUDIO RECORDING SESSION
510
RECEIVE A FIRST SET OF AUDIO DATA ON AN INFORMATION APPLIANCE
512
USER INPUTS NOTES INTO INFORMATION APPLIANCE DURING THE RECORDING OF THE AUDIO DATA
514
RECEIVE A SECOND SET OF DATA INPUT BY A USER ON THE INFORMATION APPLIANCE
516
LINK THE SECOND SET OF DATA INPUT BY THE USER TEMPORALLY TO THE FIRST SET OF AUDIO DATA RECEIVED BY THE INFORMATION APPLIANCE
518
OUTPUT THE FIRST SET OF AUDIO DATA INCLUDING THE SECOND SET OF DATA INPUT BY THE USER
520
USER HEARS THE FIRST SET OF AUDIO DATA AND EXPERIENCES THE SECOND SET OF DATA INPUT BY THE USER IN A MANNER CORRESPONDING TO WHEN THE SECOND SET OF DATA WAS INPUT AND THE FIRST SET OF AUDIO DATA WAS RECEIVED
522
500

FIG. 5

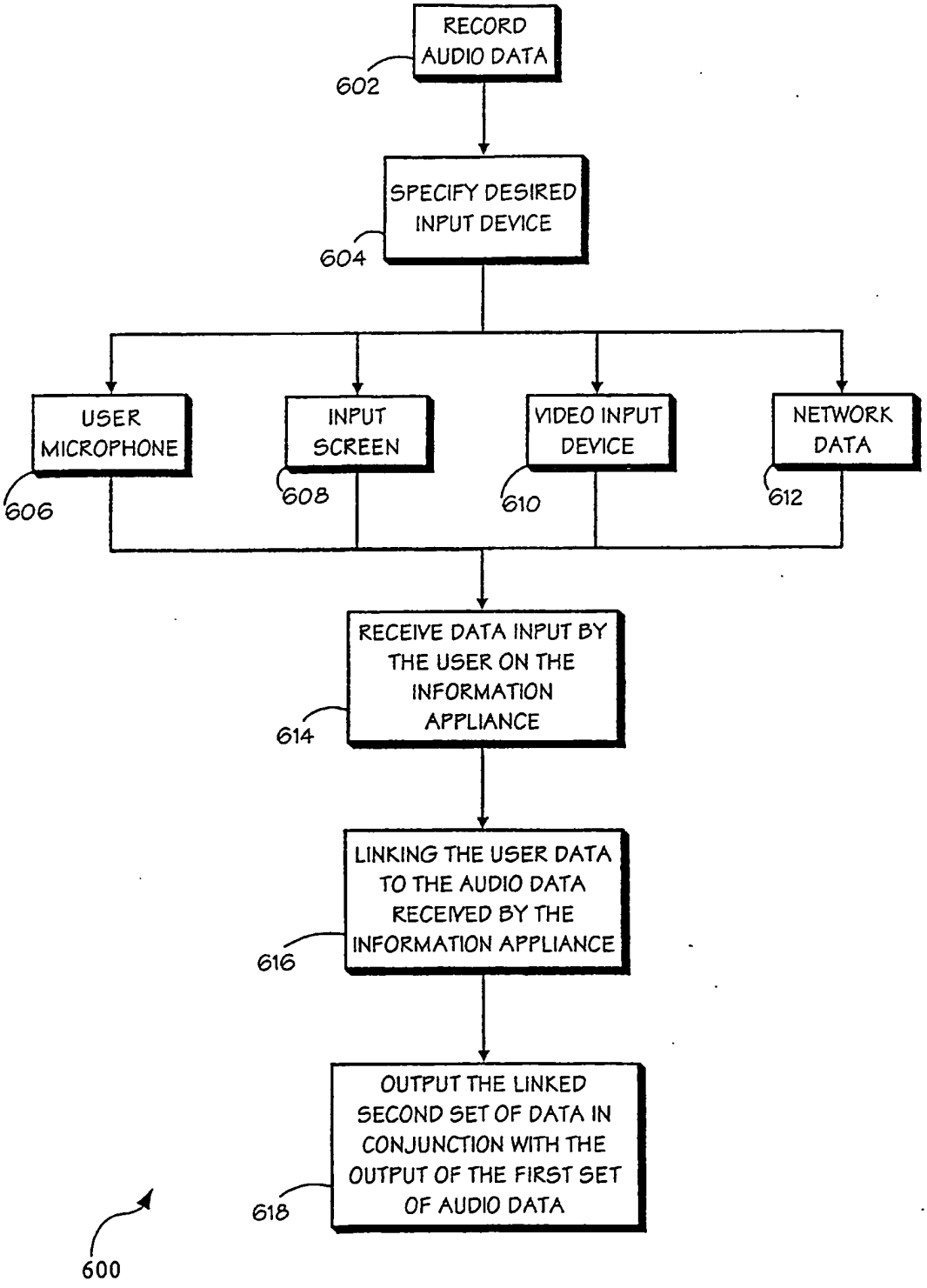
RECORD AUDIO DATA
602
SPECIFY DESIRED INPUT DEVICE
604
USER MICROPHONE
606
INPUT SCREEN
608
VIDEO INPUT DEVICE
610
NETWORK DATA
612
RECEIVE DATA INPUT BY THE USER ON THE INFORMATION APPLIANCE
614
LINKING THE USER DATA TO THE AUDIO DATA RECEIVED BY THE INFORMATION APPLIANCE
616
OUTPUT THE LINKED SECOND SET OF DATA IN CONJUNCTION WITH THE OUTPUT OF THE FIRST SET OF AUDIO DATA
618
600

FIG. 6

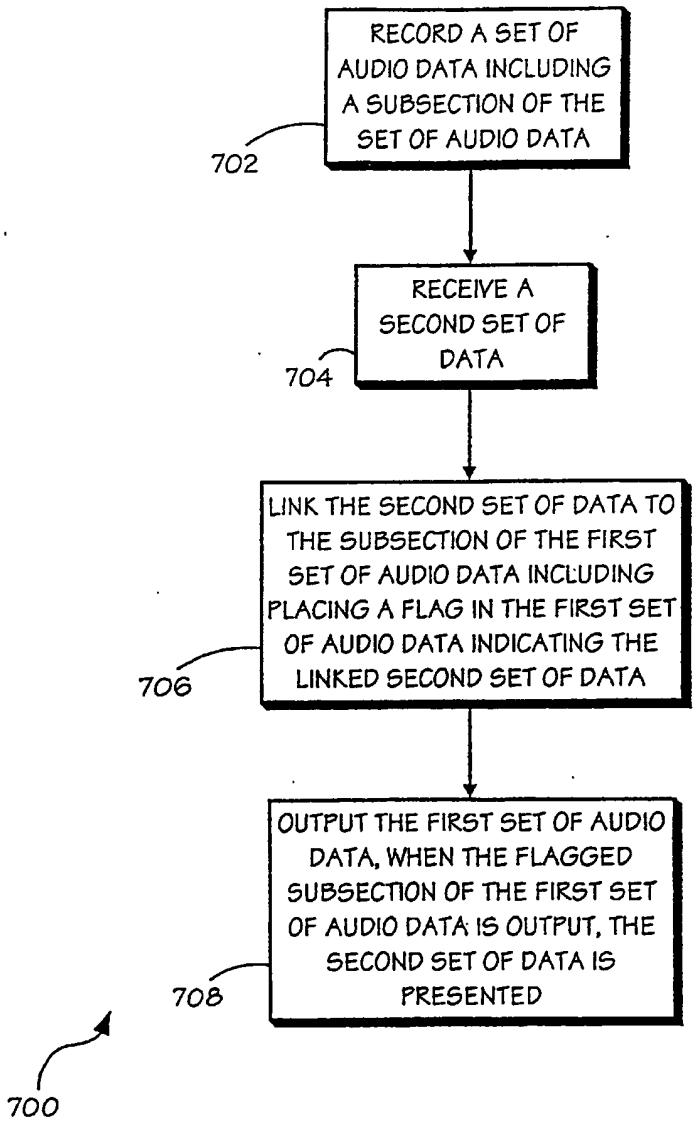
RECORD A SET OF AUDIO DATA INCLUDING A SUBSECTION OF THE SET OF AUDIO DATA
702
RECEIVE A SECOND SET OF DATA
704
LINK THE SECOND SET OF DATA TO THE SUBSECTION OF THE FIRST SET OF AUDIO DATA INCLUDING PLACING A FLAG IN THE FIRST SET OF AUDIO DATA INDICATING THE LINKED SECOND SET OF DATA
706
OUTPUT THE FIRST SET OF AUDIO DATA, WHEN THE FLAGGED SUBSECTION OF THE FIRST SET OF AUDIO DATA IS OUTPUT, THE SECOND SET OF DATA IS PRESENTED
708
700

FIG. 7

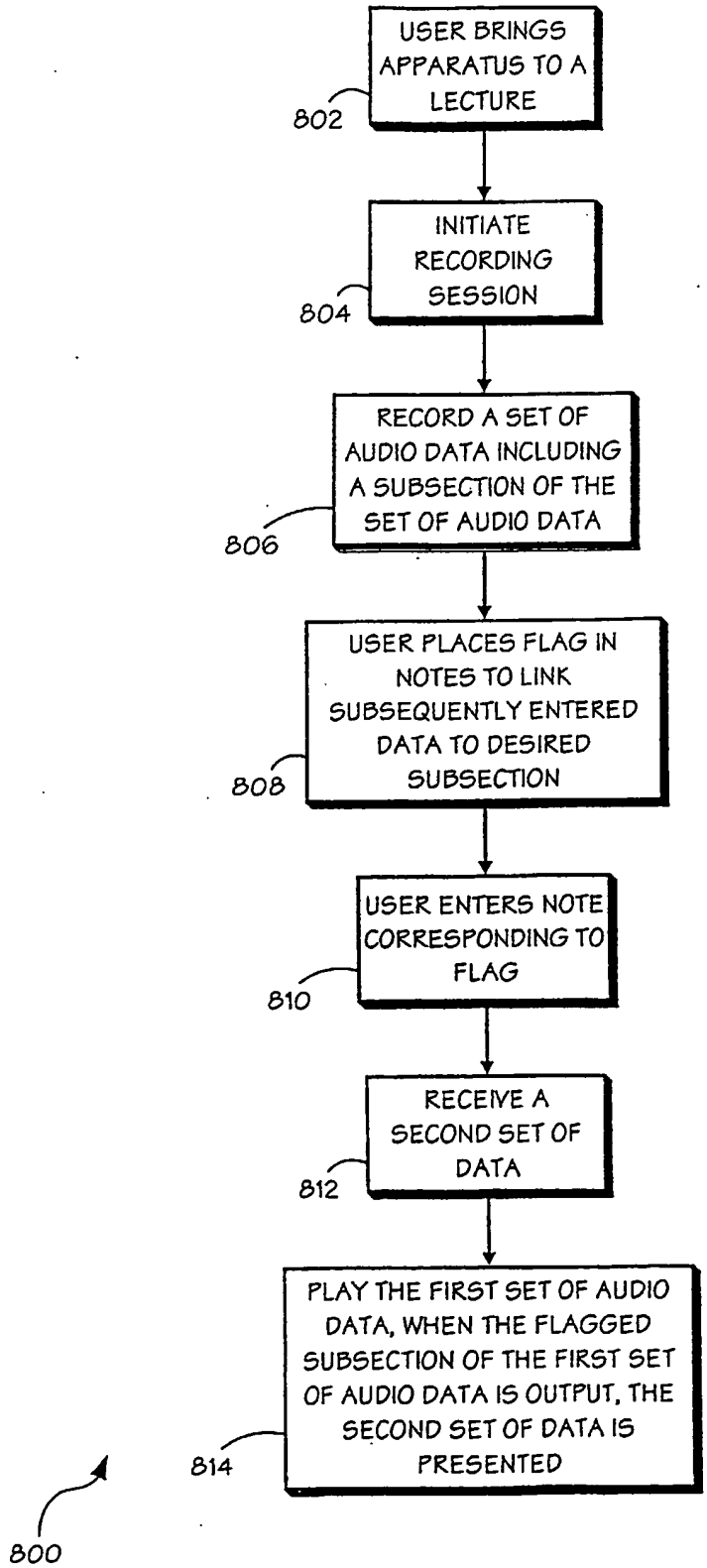
USER BRINGS APPARATUS TO A LECTURE
802
INITIATE RECORDING SESSION
804
RECORD A SET OF AUDIO DATA INCLUDING A SUBSECTION OF THE SET OF AUDIO DATA
806
USER PLACES FLAG IN NOTES TO LINK SUBSEQUENTLY ENTERED DATA TO DESIRED SUBSECTION
808
USER ENTERS NOTE CORRESPONDING TO FLAG
810
RECEIVE A SECOND SET OF DATA
812
PLAY THE FIRST SET OF AUDIO DATA, WHEN THE FLAGGED SUBSECTION OF THE FIRST SET OF AUDIO DATA IS OUTPUT, THE SECOND SET OF DATA IS PRESENTED
814
800

FIG. 8

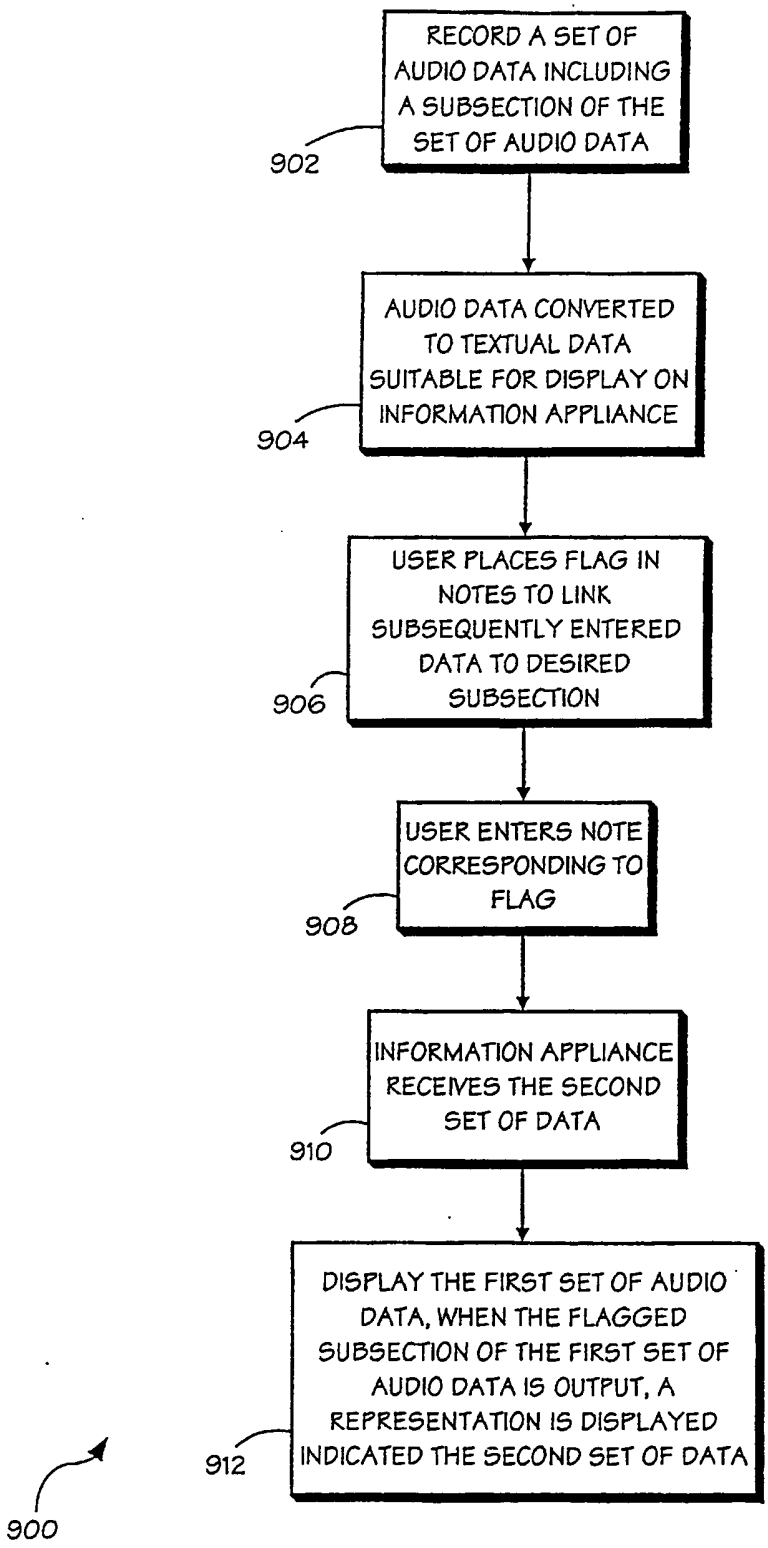
RECORD A SET OF AUDIO DATA INCLUDING A SUBSECTION OF THE SET OF AUDIO DATA
902
AUDIO DATA CONVERTED TO TEXTUAL DATA SUITABLE FOR DISPLAY ON INFORMATION APPLIANCE
904
USER PLACES FLAG IN NOTES TO LINK SUBSEQUENTLY ENTERED DATA TO DESIRED SUBSECTION
906
USER ENTERS NOTE CORRESPONDING TO FLAG
908
INFORMATION APPLIANCE RECEIVES THE SECOND SET OF DATA
910
DISPLAY THE FIRST SET OF AUDIO DATA, WHEN THE FLAGGED SUBSECTION OF THE FIRST SET OF AUDIO DATA IS OUTPUT, A REPRESENTATION IS DISPLAYED INDICATED THE SECOND SET OF DATA
912
900

FIG. 9

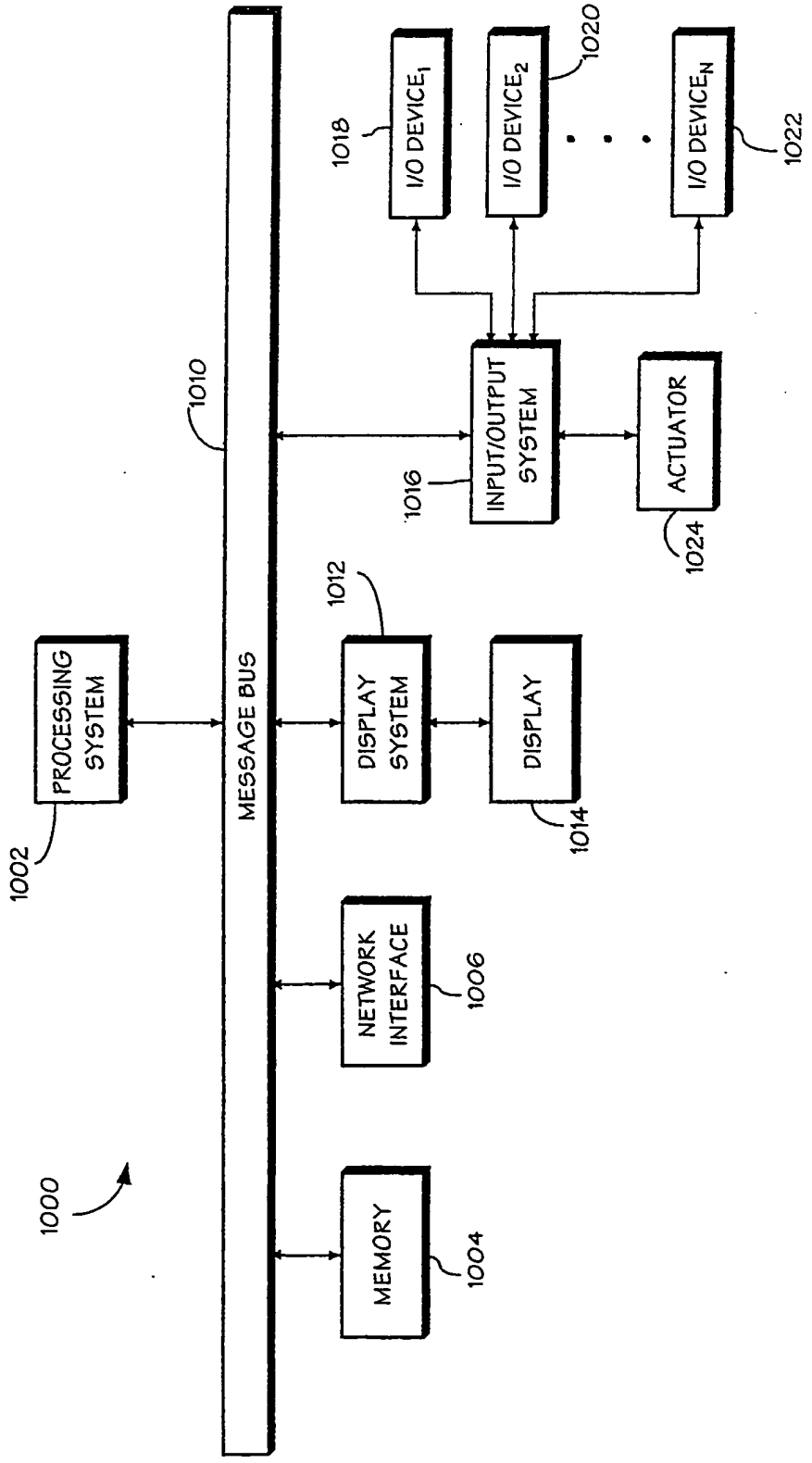
1000
PROCESSING SYSTEM
1002
MESSAGE BUS
1010
DISPLAY SYSTEM
1012
DISPLAY
1014
NETWORK INTERFACE
1006
MEMORY
1004
INPUT/OUTPUT SYSTEM
1016
ACTUATOR
1024
I/O DEVICE1
1018
I/O DEVICE2
1020
I/O DEVICEN
1022

FIG. 10

AN APPARATUS AND METHOD OF GENERATING AN AUDIO RECORDING INCLUDING LINKED DATA

FIELD OF THE INVENTION

The present invention generally relates to the field of interactive media, and particularly to an apparatus and method of generating an audio recording including linked data.

BACKGROUND OF THE INVENTION

Summarizing data for later review is one of the most common tasks performed in the learning experience. From business to education, it is often necessary to summarize data so that the data may be later reviewed in a more expedient manner. For example, note taking is one of the most arduous tasks a student faces while taking courses. Students usually take notes during lectures in order to summarize the information for study at a later time. Typically, a student would take notes of the lecture to summarize relevant portions. However, one limitation with notes is that much of the content, and perhaps accuracy, is lost in the summary.

One method used to address this problem involves recording the lecture on audio data recorders. Some students may record the entire lecture on tape, in order to have the option of listening to part or even the entire lecture again. However, such a recording did not contain other relevant data desired by the student, such as visual diagrams utilized by the instructor, and the like. Thus, the user was limited to general listening of the lecture. Additionally, even if the user also took notes, those notes had to be kept separately and did not provide a manner in which to view the notes with the corresponding point of the lecture. Therefore, the user, often studying at a point much later in time than when the notes were taken, had difficulty in relating the notes with the recorded lecture.

Thus, it would be desirable to provide a system and method of generating an audio recording including linked data.

SUMMARY OF THE INVENTION

Accordingly, the present invention is directed to an apparatus and method for providing an audio recording including linked data. In a first aspect of the present invention a method of generating an audio recording including linked data includes receiving a first set of audio data on an information appliance and receiving a second set of data input by a user on the information appliance. The second set of data input by the user is linked to the first set of audio data received by the information appliance. Thus, upon output of the first set of audio data, the linked second set of data is output by the information appliance in conjunction with the output of the first set of audio data so as to enable access to both the first and second sets of data.

In a second aspect of the present invention, a method for generating an audio recording including linked data includes receiving a set of audio data including a subsection of the set of audio data and receiving a second set of data. The second set of data is linked to the subsection of the first set of audio data. Linking the data includes placing a flag in the first set of audio data indicating the linked second set of data so that when the audio data is output, the second set of data is presented when the subsection of the first set of audio data is output.

In a third aspect of the present invention, an apparatus for generating an audio recording including linked data includes an audio recording device suitable for receiving a set of audio data including a subsection of the set of audio data. An input device suitable for receiving a second set of data is coupled to the audio recording device, wherein the second set of data is linked to the section of the first set of audio data by placing a flag in the section of the first set of audio data indicating the linked second set of data. Thus, when the audio data is output, the second set of data is presented when the section of the first set of audio data is output.

It is to be understood that both the forgoing general description and the following detailed description are exemplary and explanatory only and are not restrictive of the invention as claimed. The accompanying drawings, which are

incorporated in and constitute a part of the specification, illustrate an embodiment of the invention and together with the general description, serve to explain the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The numerous advantages of the present invention may be better understood by those skilled in the art by reference to the accompanying figures in which:

FIG. 1 is an isometric drawing illustrating an exemplary embodiment of the present invention wherein an information appliance is configured as a note taking apparatus suitable for receiving audio data;

FIG. 2 is an isometric drawing further illustrating the exemplary embodiment as shown in FIG. 1, wherein the information appliance displays links suitable for accessing a second set of data from a first set of audio data;

FIG. 3 is an isometric drawing further illustrating the exemplary embodiment of the present invention as shown in FIG. 1, wherein audio data received by an information appliance is converted to textual data suitable for display on the information appliance and suitable for linking to a second set of data;

FIG. 4 is a flow diagram depicting an exemplary method of the present invention wherein a set of audio data includes a linked second set of data input by a user;

FIG. 5 is a flow diagram illustrating an exemplary method of the present invention wherein a second set of data including user notes is linked to a first set of recorded audio data;

FIG. 6 is a flow diagram illustrating an exemplary method wherein a user may specify an input device for receiving a second set of data suitable for linking to a first set of audio data;

FIG. 7 is a flow diagram depicting an exemplary method wherein a second set of data is linked to a first set of audio data by placing a flag in the first set of audio data;

FIG. 8 is a flow diagram depicting an exemplary embodiment wherein a second set of data is linked to a first set of audio data utilizing a flag so as to enable the second set of data to be entered subsequently to the placement of the flag yet still enable the sets of data to be presented in a manner corresponding to the placement of the flag;

FIG. 9 is a flow diagram illustrating an exemplary method wherein a set of audio data received by an information appliance is converted to a textual display suitable for linking by a second set of data; and

FIG. 10 is a block diagram of an exemplary information appliance operable to employ the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Reference will now be made in detail to the presently preferred embodiments of the invention, examples of which are illustrated in the accompanying drawings.

Referring generally now to FIG. 1, an exemplary embodiment of the present invention is shown wherein an apparatus suitable for generating an audio recording including linked data is shown. An apparatus 100 of the present invention may be configured as an information appliance suitable for mobile operation by a user. The apparatus may include a video display device 102 for displaying visual information. Additionally, it may be desirable to incorporate a touch sensitive surface on the video display 102 to enable a user to input data by interacting directly with the display 102. For example, a user may utilize a stylus 104 to input handwritten text 106 on the display 102. Preferable, the information appliance 100 employs optical character recognition software to convert the handwritten text to data understandable by the appliance, thus enabling the appliance to manipulate the data. In this way, a user may input handwritten notes during the course of a presentation, speech, lecture, and the like.

Further, the information appliance 100 may include an audio input device, such as a microphone 108, so as to enable the apparatus 100 to record audio data. It

may also be preferable to include two audio input devices, wherein the first audio device 108 is optimized for recording audio data as given by a speaker in a lecture and the second audio input device 110 is optimized for receiving speech from the user. It may be preferable to include the second audio input device 110 as a part of the stylus 104, thus enabling the user to bring the audio input device 110 closer to the user to provide a better recording.

Referring now to FIG. 2, an additional view of the exemplary embodiment of FIG. 1 is shown wherein the information appliance 100 displays links suitable for accessing a second set of data from a first set of audio data. A user may enter notes on the information appliance related to a presentation. For example, the notes may include the well-known formula of energy equals mass multiplied by the speed of light squared 112 with the use of a stylus 104. The information appliance 100 may receive these notes and link them to the relevant points of the lecture. For instance, as the lecturer explains the theory, the notes 114 taken by the user may also be recorded. Upon playback of the lecture on the information appliance 100, the notes may be displayed in a temporal relationship corresponding to when the notes were written. In this way the user may interact with the recorded data in an improved manner.

There are a wide variety of types of data that may be linked to an audio recording without departing from the spirit and scope of the present invention. For example, a user microphone may be provided for recording the user's comment with the lecture separately 110. Thus, the user may listen to the lecturer with his own comments, the lecturer alone, or the user notes alone as desired. It may be desirable to display the linked sets of data as representations 116 on the display device 102 to enable a user to access the data as desired. Further, the user may capture video data with the user of a video capture device and link that data 118 to the audio recording. For instance, the user may link a photo involving energy to mass 118 and/or a video recording of data displayed on a screen 120 by a lecturer and recorded by the user, and the like. It may also be preferable to utilize a "clip" button 122 to initiate the recording of the second set of data so as to provide just the portion of the data as

desired by the user. Moreover, network data may also be linked to the audio recording as desired such as by providing an address 124 on the World Wide Web to related information.

A method for searching the linked data may also be desirable to provide an expedient and efficient manner of finding desired subsections of the data. For example, a search button 126 may be provided to initiate a searching utility. The search may be performed per type of data such as visual, audio, network, and the like, a temporal search wherein a user may choose from a plurality of linked data based on the corresponding time that first set of data was recorded and/or linked and the like as contemplated by a person of ordinary skill in the art.

Referring now to FIG. 3, the exemplary apparatus 100 of FIG. 1 is shown wherein audio data received by an information appliance is converted to textual data suitable for display on the information appliance and is also suitable for being linked by a second set of data. The information appliance receives audio data. The audio data is then converted to textual data and displayed in a window on the display device of the information appliance. A user, wishing to link additional data to the audio data, may utilize the "clip" button 122 to flag a subsection 130 of the text 128 to which the additional data set is to be linked, and the like as contemplated by a person of ordinary skill in the art.

Referring now to FIG. 4, an exemplary method 400 of the present invention is shown wherein a set of audio data includes a linked second set of data input by a user. An information appliance receives a first set of audio data 402. Receiving audio data may include recording audio data on the information appliance, receiving audio data recorded by another recording device and transmitted to the information appliance, and the like as contemplated by a person of ordinary skill in the art. A user of the information appliance 404 inputs a second set of data. Inputting the second set of data may include using a stylus and/or keyboard to enter data, receiving speech input spoken by a user, receiving visual data such as video and still pictures, linking to network sites such as web sites on the Internet, and the like. The second set of data

input is linked to the first set of audio data received by the information appliance 406. By linking the sets of data, the linked second set of data is suitable for output in conjunction with the output of the first set of audio data 408. In this way, a user may interact with both sets of data.

For example, as shown in FIG. 5, an exemplary method 500 includes linking a second set of data including user notes to a set of recorded audio data. A user may take an information appliance suitable for use as a note-taking device, such as the example apparatus shown in FIGS. 1 through 3, to a lecture. The user may then initiate an audio recording session 502 to record the lecture given by an instructor. A first set of audio data is then received by the information appliance 504 of the lecture being recorded. As the lecture is being received, a user may input notes into the audio recording taken by the information appliance 506. The notes are received by the information appliance as a second set of data 508. The second set of data input by the user may then be temporally linked to the first set of audio data received by the information appliance 510. For instance, as the user receives audio data, the user may wish to make a note corresponding to the audio data just heard. The user may link the user inputted notes to the relevant subsection of the audio data so that as the audio data is played, the second set of data input by the user is also output 512. Thus, the user hears the first set of audio data and experiences the second set of data in a manner corresponding to when the second set of data was input and the first set of audio data was received 514. In this way, a user may view the second set of data with the relevant audio data in a concise and optimized manner.

Referring now to FIG. 6, an exemplary method 600 of the present invention is shown wherein a user may specify an input device for receiving a second set of data for linking to a first set of audio data. A user may initiate an audio recording session to record audio data 602, such as to record a presentation given at a convention, symposium, and the like. The user may then specify a desired input device 604, such as a user microphone 606 to record audio data from the user, a user input screen 608 such as a touch sensitive screen, a video input device 610 for recording a digital

image or group of images, network data 612 such as a link to a web site, and the like as contemplated by a person of ordinary skill in the art. The information appliance may then receive data input by the user 614 from the selected input device. The user data is capable of being linked to the audio data received by the information appliance 616. Thus, the second set of user data is suitable for output in conjunction with the first set of audio data 618. In this way, a user is able to utilize a variety of input devices for inputting various forms of data suitable for linking with a set of audio data.

Referring now to FIG. 7, an exemplary embodiment 700 of the present invention is shown wherein a second set of data is linked to a first set of audio data by placing a flag in the first set of audio data. A set of audio data is recorded, the set of data including a subsection 702. A second set of data is also received 704. The second set of data is linked to the subsection of the first set of audio data by placing a flag in the first set of audio data indicating the linked second set of data 706. Thus, during the output of the first set of audio data, when the flagged subsection of the first set of audio data is output, the second set of data is presented 708.

For example, as shown in FIG. 8, in an exemplary embodiment 800 of the present invention, a second set of data is linked to a first set of audio data utilizing a flag so as to enable the second set of data to be entered subsequently to the placement of the flag yet still enable the sets of data to be presented in a manner corresponding to the placement of the flag. A user may bring an apparatus of the present invention to a lecture 802 for taking notes. A recording session is initiated 804 to record a set of audio data including a subsection 806. As the user listens to the lecture, a point may be made by the lecturer with which the user wishes to associate a note. To accomplish this, a user may place a flag in the notes 808 to indicate a second set of data that the user wishes to associate with the desired subsection of the first set of audio data. The user may then enter a note corresponding to the flag 810 and have that second set of data received by the apparatus 812. Therefore, when the first set of audio data is played, upon presentation of the flagged subsection of the first set of

audio data, the second set of data may also be presented 814. This enables a user to enter data subsequently to the receipt of the subsection of the first set of audio data yet still enable both sets of data to be output concurrently.

Referring now to FIG. 9, an exemplary embodiment 900 of the present invention is shown wherein a set of audio data received by an information appliance is converted to a textual display suitable for linking by a second set of data. A set of audio data including a subsection is recorded 902 by an information appliance. The audio data is then converted to textual data suitable for display on the information appliance 904. For instance, the textual data may be displayed in a window on a display device of the information appliance as shown in FIG. 3. If the user wishes to link a note to the audio data displayed as textual data, the user may place a flag in the notes to link subsequently entered data to the desired subsection 906. For instance, a user may double tap a stylus proximally to a word, sentence, letter and the like of the displayed audio data to insert a flag, press a start clip button as shown in FIGS. 1 and 2, and the like as contemplated by a person of ordinary skill in the art. By inserting a flag, the user is able to enter a note corresponding to the flag 908 yet still have the flag associated with the desired subsection. Therefore, the information appliance may receive the second set of data input by the user 910 subsequently to the receipt of the first set of audio data yet still link the data sets. In this way, a first set of audio data may be displayed, and when the flagged subsection of the first set of audio data is output, a representation may be displayed indicating the second set of data 912. Thus, the user may then access the second set of data from the presentation of the first set of data, thereby providing a comprehensive note taking and viewing experience.

Referring now to FIG. 10, a hardware system operable to employ the present invention is shown. The hardware system shown in FIG. 10 is generally representative of the hardware architecture of an information appliance of the present invention. An information appliance may include an information handling system, convergence system, Internet appliance, and the like without departing from the spirit and scope of the present invention. A controller, for example, a processing system

1002, controls the information appliance 1000. The processing system 1002 includes a central processing unit such as a microprocessor or microcontroller for executing programs, performing data manipulations and controlling the tasks of the information appliance 1000. Communication with the processing system 1002 may be implemented through a system bus 1010 for transferring information among the components of the information appliance 1000. The system bus 1010 may include a data channel for facilitating information transfer between storage and other peripheral components of the information appliance 1000. The system bus 1010 further provides the set of signals required for communication with processing system 1002 including a data bus, address bus, and control bus. The system bus 1010 may comprise any state of the art bus architecture according to promulgated standards, for example industry standard architecture (ISA), extended industry standard architecture (EISA), Micro Channel Architecture (MCA), peripheral component interconnect (PCI) local bus, standards promulgated by the Institute of Electrical and Electronics Engineers (IEEE) including IEEE 488 general-purpose interface bus (GPIB), IEEE 696/S-600, and so on. Furthermore, the system bus 1010 may be compliant with any promulgated industry standard. For example, the system bus 1010 may be designed in compliance with any of the following bus architectures: Industry Standard Architecture (ISA), Extended Industry Standard Architecture (EISA), Micro Channel Architecture, Peripheral Component Interconnect (PCI), Universal Serial Bus (USB), Access bus, IEEE P6394, Apple Desktop Bus (ADB), Concentration Highway Interface (CHI), Fire Wire, Geo Port, or Small Computer Systems Interface (SCSI), for example.

Additionally, the information appliance 1000 includes a memory 1004. In one embodiment, memory 1004 is provided on SIMMs (Single In-line Memory Modules), while in another embodiment, memory 1004 is provided on DIMMs (Dual In-line Memory Modules), each of which plugs into suitable sockets provided on a motherboard holding many of the other components shown in FIG. 10. Memory 1004 includes standard DRAM (Dynamic Random-Access Memory), EDO (Extended

Data Out) DRAM, SDRAM (Synchronous DRAM), or other suitable memory technology. Memory 1004 may also include auxiliary memory to provide storage of instructions and data that are loaded into the memory 1004 before execution. Auxiliary memory may include semiconductor based memory such as read-only memory (ROM), programmable read-only memory (PROM) erasable programmable read-only memory (EPROM), electrically erasable read-only memory (EEPROM), or flash memory (block oriented memory similar to EEPROM).

The information appliance 1000 further includes a network connection device 1006. The network connection device 1006 communicates between the information appliance 1000 and a remote device, such as external devices, networks, information sources, or host systems that administer a plurality of information appliances. For example, host systems such as a server or information appliance, may run software controlling the information appliance, serve as storage for an information appliance, or coordinate software running separately on each information appliance. The network connection device 1006 may provide or receive analog, digital, or radio frequency data. The network connection device 1006 preferably implements industry promulgated architecture standards, including Recommended Standard 232 (RS-232) promulgated by the Electrical Industries Association, Infrared Data Association (IrDA) standards, Ethernet IEEE 802 standards (e.g., IEEE 802.3 for broadband and baseband networks, IEEE 802.3z for Gigabit Ethernet, IEEE 802.4 for token passing bus networks, IEEE 802.5 for token ring networks, IEEE 802.6 for metropolitan area networks, 802.66 for wireless networks, and so on), Fibre Channel, digital subscriber line (DSL), asymmetric digital subscriber line (ASDL), frame relay, asynchronous transfer mode (ATM), integrated digital services network (ISDN), personal communications services (PCS), transmission control protocol/Internet protocol (TCP/IP), serial line Internet protocol/point to point protocol (SLIP/PPP), Universal Serial Bus (USB), and so on. For example, the network connection device 1006 may comprise a network adapter, a serial port, parallel port, printer adapter, modem, universal asynchronous receiver-transmitter (UART) port, and the like, or use various

wireless technologies or links such as an infrared port, radio-frequency (RF) communications adapter, infrared transducers, or RF modem.

The information appliance 1000 further includes a display system 1012 for connecting to a display device 1014. The display system 1012 may comprise a video display adapter having all of the components for driving the display device, including video random access memory (VRAM), buffer, and graphics engine as desired. The display device 1014 may comprise a liquid-crystal display (LCD), cathode ray tube (CRT), or may comprise alternative type of display technologies, such as a light-emitting diode (LED) display, gas or plasma display, or employ flat-screen technology.

An information appliance 1000 may further include an input/output (I/O) system 1016 for connecting to one or more I/O devices 1018, 1020, and up to *N* number of I/O devices 1022. Input/output system 1016 may comprise one or more controllers or adapters for providing interface functions between one or more of I/O devices 1018-1022. For example, input/output system 1016 may comprise a serial port, parallel port, network adapter, printer adapter, radio-frequency (RF) communications adapter, universal asynchronous receiver-transmitter (UART) port, and the like, for interfacing between corresponding I/O devices such as a mouse, joystick, trackball, trackpad, trackstick, infrared transducers, printer, modem, RF modem, bar code reader, charge-coupled device (CCD) reader, scanner, compact disc (CD), compact disc read-only memory (CD-ROM), digital versatile disc (DVD), video capture device, touch screen, stylus, electroacoustic transducer, microphone, speaker, and the like. It should be appreciated that modification or reconfiguration of the information appliance 1000 of FIG. 10 by one having ordinary skill in the art would not depart from the scope or the spirit of the present invention. For example, input/output system 1016 may include devices typically utilized only for input, such as a microphone, video capture device, and the like.

Although the invention has been described with a certain degree of particularity, it should be recognized that elements thereof may be altered by persons

skilled in the art without departing from the spirit and scope of the invention. One of the embodiments of the invention can be implemented as sets of instructions resident in the memory 1004 of one or more information appliances configured generally as described in FIG. 10. Until required by the information appliance, the set of instructions may be stored in another readable memory device, for example in a hard disk drive or in a removable memory such as an optical disc for utilization in a CD-ROM drive, a floppy disk for utilization in a floppy disk drive, a floppy/optical disc for utilization in a floppy/optical drive, or a personal computer memory card for utilization in a personal computer card slot. Further, the set of instructions can be stored in the memory of an information appliance and transmitted over a local area network or a wide area network, such as the Internet, when desired by the user. Additionally, the instructions may be transmitted over a network in the form of an applet that is interpreted or compiled after transmission to the computer system rather than prior to transmission. One skilled in the art would appreciate that the physical storage of the sets of instructions or applets physically changes the medium upon which it is stored electrically, magnetically, chemically, physically, optically or holographically so that the medium carries computer readable information.

In exemplary embodiments, the methods disclosed may be implemented as sets of instructions or software readable by a device. Further, it is understood that the specific order or hierarchy of steps in the methods disclosed are examples of exemplary approaches. Based upon design preferences, it is understood that the specific order or hierarchy of steps in the method can be rearranged while remaining within the scope of the present invention. The accompanying method claims present elements of the various steps in a sample order, and are not meant to be limited to the specific order or hierarchy presented.

It is believed that the apparatus and method of generating an audio recording including linked data of the present invention and many of its attendant advantages will be understood by the forgoing description. It is also believed that it will be apparent that various changes may be made in the form, construction and

arrangement of the components thereof without departing from the scope and spirit of the invention or without sacrificing all of its material advantages. The form herein before described being merely an explanatory embodiment thereof. It is the intention of the following claims to encompass and include such changes.

CLAIMS

What is claimed is:

1. A method of generating an audio recording including linked data, comprising:
receiving a first set of audio data on an information appliance;
receiving a second set of data input by a user on the information appliance; and
linking the second set of data input by the user to the first set of audio data received by the information appliance, wherein upon output of the first set of audio data, the linked second set of data is output by the information appliance in conjunction with the output of the first set of audio data so as to enable access to both the first and second sets of data.

2. The method as described in claim 1, wherein the second set of data includes at least one of data input by a user utilizing a stylus, data input by a user utilizing a keyboard, video data and a link to data accessible over a network.

3. The method as described in claim 1, wherein the link includes temporally linking the second set of data as input by the user with the first set of audio data as it is received by the information appliance.

4. The method as described in claim 3, wherein the first set of audio data is output by the information appliance, the second set of data input by the user is output in a manner corresponding temporally to when the first set of audio data and the second set of data input by the user were received.

5. The method as described in claim 1, further comprising converting the first set of audio data to textual data so as to enable the first set of audio data to be

output in a visual manner.

6. The method as described in claim 5, wherein the visual output of the first set of audio data is displayed concurrently with the second set of data input by the user, the second set of data including visual data, so as to enable a user to view both the visual output of the first set of audio data with a visual output of the second set of data.

7. The method as described in claim 1, wherein linking includes placing a flag in a section of the first set of audio data indicating the linked second set of data so that when the audio data is output, the second set of data is presented when the section of the first set of audio data is output.

8. The method as described in claim 7, wherein the flag is placed in the set of audio data before the second set of data is received.

9. The method as described in claim 8, wherein the placement of the flag in the set of audio data before the second set of data is received enables a user to input the second set of data subsequently to the recording of the subsection of the set of audio data, yet upon output of the subsection of the set of audio data, the second set of data is presented corresponding with the subsection of the first set of audio data.

10. A method for generating an audio recording including linked data, comprising:

receiving a set of audio data including a subsection of the set of audio data;

receiving a second set of data; and

linking the second set of data to the subsection of the first set of audio data, wherein linking includes placing a flag in the first set of audio data indicating the linked second set of data so that when the audio data is output, the second set of data is presented when the subsection of the first set of audio data is output.

11. The method as described in claim 10, wherein the flag is placed at least one of before the subsection of the set of audio data and in the subsection of the set of audio data.

12. The method as described in claim 10, wherein the flag is placed in the set of audio data before the second set of data is received.

13. The method as described in claim 12, wherein the placement of the flag in the set of audio data before the second set of data is received enables a user to input the second set of data subsequently to the recording of the subsection of the set of audio data, yet upon output of the subsection of the set of audio data, the second set of data is presented corresponding with the subsection of the first set of audio data.

14. The method as described in claim 10, wherein the second set of data includes at least one of data input by a user utilizing a stylus, data input by a user utilizing a keyboard, video data and a link to data accessible over a network.

15. The method as described in claim 10, wherein the link includes temporally

linking the second set of data as input by the user with the first set of audio data as it is received by the information appliance.

16. The method as described in claim 15, wherein the first set of audio data is output by the information appliance, the second set of data input by the user is output in a manner corresponding temporally to when the first set of audio data and the second set of data input by the user were received.

17. The method as described in claim 10, further comprising converting the first set of audio data to textual data so as to enable the first set of audio data to be output in a visual manner.

18. The method as described in claim 17, wherein the visual output of the first set of audio data is displayed concurrently with the second set of data input by the user, the second set of data including visual data, so as to enable a user to view both the visual output of the first set of audio data with a visual output of the second set of data.

19. An apparatus for generating an audio recording including linked data, comprising:

an audio recording device suitable for receiving a set of audio data including a subsection of the set of audio data; and

an input device suitable for receiving a second set of data is coupled to the audio recording device, wherein the second set of data is linked to the section of the first set of audio data by placing a flag in the section of the first set of audio data indicating the linked second set of data so that when the first set of audio data is output, the second set of data is presented when the subsection of the first set of audio data is output.

20. The apparatus as described in claim 19, wherein the flag is placed at least one of before the subsection of the set of audio data and in the subsection of the set of audio data.

21. The apparatus as described in claim 19, wherein the flag is placed in the set of audio data before the second set of data is received.

22. The apparatus as described in claim 21, wherein the placement of the flag in the set of audio data before the second set of data is received enables a user to input the second set of data subsequently to the recording of the subsection of the set of audio data, yet upon output of the subsection of the set of audio data, the second set of data is presented corresponding with the subsection of the first set of audio data.

23. The apparatus as described in claim 19, wherein the second set of data includes at least one of data input by a user utilizing a stylus, data input by a user utilizing a keyboard, video data and a link to data accessible over a network.

24. The apparatus as described in claim 19, wherein the link includes temporally linking the second set of data as input by the user with the first set of audio data as it is received by the information appliance.

25. The apparatus as described in claim 24, wherein the first set of audio data is output by the information appliance, the second set of data input by the user is output in a manner corresponding temporally to when the first set of audio data and the second set of data input by the user were received.

26. The apparatus as described in claim 19, further comprising converting the first set of audio data to textual data so as to enable the first set of audio data to be output in a visual manner.

27. The apparatus as described in claim 26, wherein the visual output of the first set of audio data is displayed concurrently with the second set of data input by the user, the second set of data including visual data, so as to enable a user to view both the visual output of the first set of audio data with a visual output of the second set of data.

INVESTOR IN PEOPLE

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Claims searched: 1 to 27

Examiner: Andrew Hole
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Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): G5G (G506)

Int Cl (Ed.7): G06F3/033, 15/02; G11B 27/28, 31/00; G09B 5/06

Other: Online: WPI, EPODOC, PAJ

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	EP 0866397 A1	(XEROX) See column 4, line 55 to column 7, line 52.	1 to 27.
X	EP 0495612 A2	(XEROX) See whole document.	1 to 27.
X	US 4924387	(JEPPESEN) See column 7, line 8 to column 10, line 48.	1 to 27.
A	US 4841387	(RINDFUSS) See column 11, line 60 to column 13, line 25.	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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